

Abdominal Hydatids: A Minimally Invasive Approach

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ABSTRACT

Background: The conventional surgical procedures for managing abdominal hydatids, including those of the liver, have a very high morbidity rate in terms of hospital stay and wound complications. Less invasive procedures may thus be logical alternatives.

Method: We enrolled 58 patients in the study. Using guided ultrasound aspiration followed by instillation of 15% saline, we were able to manage 16 patients as outpatients. In the remaining 42 patients, saline instillation was combined with laparoscopic aided percutaneous evacuation combined with partial pericystectomy. Omental packing was added in four patients. A pericystic drain tube was left in every patient managed laparoscopically.

Results: In the aspiration group, two sittings were required in 12 patients and more than two sittings (3 x) in two patients. Laparoscopic parameters showed an average IV infusion time of 12.3 hrs, drain removal time of 3.2 days, and discharge time of 3.2 days. Short-term complications included prolonged tube drainage for six days in one patient, intracystic bile collection in two, and intracystic pus in four patients. The aspiration group did not have any complications. Conversion to open evacuation was done in one patient. Fifty-four months of follow-up has been recurrence free.

Conclusion: Minimally invasive management, including aspiration and laparoscopic intervention, appear to be viable alternatives to open surgery because they result in less morbidity.

Key Words: Abdominal hydatid, Percutaneous aspiration, Laparoscopic partial pericystectomy.

INTRODUCTION

With the passage of time, the treatment for abdominal hydatids, including hydatid liver cysts has been undergoing revolutionary changes. The era of open surgery with its associated large incision and prolonged stay is now being challenged by lesser invasive procedures. Thus aspiration, which was taboo even for diagnostic purposes because it contravenes many of the existing principles of hydatid surgery, has become an accepted mode of treatment,^{1,2} and laparoscopic management is probably an extension of this progress.

MATERIAL AND METHODS

All the 58 patients had a preoperative ultrasound, and cysts were classified according to Gharbi's classification (**Table 1**).³ A biochemical profile and immunochemistry were also done. An important part of preoperative workup was the routine use of albendazole 10-15 mg/Kg body weight for 28 days. Patients with Garbhi type I and II (unilocular cysts) underwent outpatient ultrasound guided aspiration with an 18 gauge lumbar puncture needle followed by instillation of lesser volume of 15% saline. Gharbi type III, lying in segment VIII, was also managed by aspiration because of its relative inaccessibility to laparoscopic intervention.

For the laparoscopic intervention, pneumoperitoneum was kept at 12 mm Hg. A Veress needle was inserted into the cyst through the shortest possible route transhepatically or preferably through an existing cystoperitoneal adhesion, if present. Aspiration was followed by injecting 15% saline, which was aspirated after 15 minutes. The needle was left in place and a 12-mm flap valve type trocar cannula was then inserted into the cyst cavity again through the shortest possible route but through a separate skin incision. The flap was then removed converting the cannula into a hollow metal tube extending into the cyst, through which complete evacuation was carried out percutaneously. To prevent the collapse of the cyst wall and associated hepatic damage during aspiration, 15% saline injection alternating with CO₂ insufflation (4 to 6 mm Hg) was continued through the Veress needle. Complete evacuation was always confirmed by intracystic telescopic visualization through the 12-mm cannula in the cyst.

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Table 1.

Gharbi's Classification of Cysts.

Type I	8
Type II	4
Type III	50
Type IV	9
Type V	1
Total Number of Cysts	72

Partial hepatic cystopericystectomy was then done by using sharp scissors/electrocautery/harmonic scalpel, through two 5-mm ports, one in the midclavicular line on the right or the left side one inch below the costal margin and one in the epigastrium midway between the umbilicus and epigastrium. The renal hydatid was approached intraperitoneally after reflecting the colon, and for the peritoneal and splenic cyst, the cannula placement varied. In those extraperitoneal cysts that did not have peritoneal adhesions, initial aspiration was done using a 21 or 20 gauge thin-walled needle to decrease the initial intracystic pressure and thus prevent peri-Veress needle leakage (**Table 2**).

Postoperative albendazole 10 to 15 mg/kg was used for 28 days in 3 doses at intervals of 14 days in the two patients with peritoneal hydatidosis.

RESULTS

Seventy-two cysts were found in 58 patients. Twelve out of the 64 hepatic hydatids were situated in segment VII/VIII (**Table 3**), and the peritoneal hydatidosis resulted from ruptured left liver lobe cysts. The largest sized cyst measured 20.2 cms.

Ultrasound guided aspiration was required only once in the patients with pancreatic and renal hydatid, but 12 patients required two sittings, and a segment VIII cyst in two patients required three sittings. In the laparoscopic group, the average intravenous (IV) infusion time was 12.3 hrs (range 6 to 24 hr). The drain removal time averaged 3.2 days (range two to six days) and average discharge time was 3.2 days with a range of two to six days.

Table 2.

Procedure Performed.

• Ultrasound guided aspiration	16
• Laparoscopic partial cystopericystectomy	42

Table 3.

Cyst Parameters.

Type	Location	Number
Hepatic	Rt. Lobe	36 (seg VII/VIII – 12)
	Lt. Lobe	28
Extrahepatic	Spleen	2
	Head pancreas	1
	Renal	3
	Peritoneal	2
	Number of cysts per patient	
	Single cyst	46 patients (46 cysts)
	Two cysts	10 patients (20 cysts)
	Three cysts	2 patients (6 cysts)
Cyst Size		
	Minimum	5.2 cm
	Maximum	20.2 cm

One patient who had Gharbi type V required conversion to open surgery, because neither the Veress needle nor the trocar could penetrate the calcified cyst wall. Short-term complications were seen in the form of prolonged biliary tube drainage in one patient, and collection of bile in the cyst cavity in two patients, and bacteriologically sterile pus in four patients. The patients with intracystic collection were managed conservatively by repeated ultrasound guided aspiration that had to be done two to five times at intervals of 15 days. No recurrence has been seen to date, the longest follow-up being 54 months, except in one patient with peritoneal hydatidosis where recurrence was seen after 36 months (**Table 4**).

Table 4.
Complications.

Procedure	Complications	No. of Patients
US guided aspiration	None	
Laparoscopic partial pericystectomy	Prolonged tube drainage >15 days	1
	Biloma	2
	Pus collection in cyst	4
	Recurrence (54 months)	1 (peritoneal)

DISCUSSION

The diversity of methods in managing the hydatid cyst is a testimony to the existing controversy. Thus, the methods range from the open partial or complete pericystectomy,^{4,5} to the relatively less invasive and hitherto contraindicated procedures of ultrasound guided aspiration^{5,6} and more recently laparoscopic management.

The percutaneous aspiration contravenes many of the principles of hydatid surgery and with an intracystic pressure going up to as high as 700 mm H₂O,⁶ perineedle leakage is highly probable. But both Khuroo et al¹ and Filice et al² inserted the needle transhepatically and treated both unicystic and multicystic cysts by aspiration and instillation of 20% saline. Their 18-month follow-up was recurrence free. A study of 558 hepatic hydatid cysts in 362 patients treated by ultrasound guided aspiration and followed for up to 5 years by ultrasound showed a gradual decrease in size after an immediate detachment of germ layer in all cysts during aspiration⁷. One-year follow-up showed an 88% complete cyst collapse and an organized pseudo-solid pattern in only 26 patients. It is important to remember that although the wall components separate immediately, complete collapse of the cyst is not imperative, and if it occurs, it may take any time from one to five years.⁷ Our series of 16 patients did not report any complications. However, in another study of 68 hepatic cysts, treated by percutaneous aspiration, infection was seen in seven patients, biliary fistula in seven, and recurrence in three patients.⁸ Ustumoz⁹ studying 72 patients reported two patients (2.8%) with infection in the postaspiration period and biliary fistula in four patients (5.6%). Extrahepatic cysts have also been aspirated successfully.¹⁰ We tried this successfully in one

patient with a cyst in the head of the pancreas and the other with a unilocular renal cyst.

Laparoscopically, the most important prerequisite of prevention of spillage of the hydatid content at all stages of surgical manipulation has been ensured by a number of methods by different surgeons. Thus Bickel et al¹¹ and Aarons¹² used a special suction cone, but Mompeon et al¹³ used a 6 French catheter inserted into the cyst. The first procedure is tedious and time-consuming, and the second leads to pericatheter leak at the time of insertion.

We suggest the following modifications that we have been using: (1) introduction of Veress needle and trocar cannula transadhesionally or transhepatically, which prevents perineedle leakage and (2) percutaneous evacuation of the cyst using the 12-mm cannula and a thick bore suction tube. What has to be kept in mind is that with evacuation, the cyst tends to collapse gradually and at this time there is the danger of the cannula getting dislodged, and this should not be allowed to happen.

The extraperitoneal cysts, if they did not have peritoneal adhesions, were initially aspirated with a thin bore needle to prevent subsequent peri-Veress leakage.

But just evacuation may not be enough because of the problem of refilling of the cavity or recurrence and thus should be combined with either internal marsupialization (partial pericystectomy) or complete excision (complete pericystectomy).

Complete laparoscopic pericystectomy is more time-consuming, technically demanding, and preferably done using laser or ultrasonic dissector and better suited for peripheral lesions.¹⁴ The only advantage of this radical

procedure may be better control of the local recurrence,¹⁵ which has been shown to be more common after partial pericystectomy. But some investigators have proposed previous rupture of the cyst as the cause of recurrence rather than inadequate removal.¹² It is thus more reasonable and less morbid to carry out a lesser partial pericystectomy. It is important to note that segment 7/8 cysts are better managed laparoscopically saving the patient the morbidity of the thoracoabdominal incision.

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